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10/582,398	09/05/2006	Kenichi Nakayama	Q95323	1173
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EXAMINER				
ARMAND, MARC ANTHONY				
ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/582,398

Applicant(s)

NAKAYAMA ET AL.

Examiner

MARC ARMAND

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-8, 11 and 12 is/are rejected.
- 7) ☒ Claim(s) 9 and 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-8, 11, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igaki et al., (Igaki) USPAT 7,026,654 in view of Ingnas et al., (Ingnas) USPAT 6,966,997.

Regarding to claims 1-4, 11, 12 Igaki shows in fig.12 an organic light-light conversion device comprising:

- a light sensing unit having a layer including a photo-conductive organic semiconductor (31)(col.5,line 63) that causes a photo-current multiplication phenomenon by light irradiation;
- a light emitting unit having a layer including an electroluminescent organic semiconductor (21)(col.5,line 60-65) that emits light by current injection, characterized in that at least one of the photo-conductive organic semiconductor;
- a unit (shown in fig.12) which measures and out put a voltage applied to both ends of the layer including the electroluminescent organic semiconductor (device designed for highly optical measurements)(col.6,line 30-35);
- Igaki differs from the claimed invention because he does not explicitly disclose a semiconductor device having the photo-conductive organic semiconductor and the electroluminescent organic semiconductor is a polymer semiconductor. Ingnas discloses a photo-conductive organic

semiconductor and the electroluminescent organic semiconductor that is a polymer semiconductor (col.6, line 4-15).

- Iganas is evidence that ordinary workers skilled in the art would find reasons, suggestions or motivations to modify the device of Igaki.

Therefore, at the time the invention was made; it would have been obvious to have a photo-conductive organic semiconductor and the electroluminescent organic semiconductor that is a polymer semiconductor (col.6, line 4-15) because polymer will enhance the stability and efficiency of the device.

As for the statements: "photo-conductive organic semiconductor that causes a photo-current multiplication phenomenon by light irradiation" and "electroluminescent organic semiconductor that emits light by current injection" are considered functional languages; labels statements of intended use, or functional language do not structurally distinguish claims over prior art, which can function in the same manner, be labeled in the same manner, or be used in the same manner. See MPEP 2112.

Regarding to claim 5 Igaka shows in fig.12 a semiconductor device comprising:
a) a light sensing unit having a layer including the photo-conductive organic semiconductor (31), b) a light emitting unit having a layer including the electroluminescent organic semiconductor (21) placed on a different location from the light sensing unit on the same substrate (11), and c) a conductive layer (14) connecting the light sensing unit to the light emitting unit laid on the same substrate.

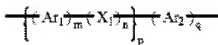
Regarding to claim 6 Igaka shows in fig.12 a semiconductor device wherein a light shielding member (16) (fig.4) (col.4, line 55-60) is provided between the light sensing unit (31) and light emitting unit (21).

Regarding to claim 7 Igaka shows in fig.12, a semiconductor device where the a translucent member (16)(resin) having a transmittance that suppresses but does not completely shield the flow of feedback light into the light sensing unit is provided between the light sensing unit and the light emitting unit (shown in fig.12).

Regarding to claim 8, Igaka shows in fig.12 a semiconductor device wherein the light sensing unit having a layer including the photo-conductive organic semiconductor (31) is integrally laminated with the light emitting unit having a layer including the electroluminescent organic semiconductor (21).

Allowable Subject Matter

7. Claims 9 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record neither anticipated nor rendered obvious all the limitation of claim 9 including a polymer semiconductor that contains one or more repeating units be the formula:



Wherein Ar.sub.1 and Ar.sub.2 each independently represent an arylene group or a divalent heterocyclic group. X.sub.1 represents --CR.sub.1.dbd.CR.sub.2--, --C.ident.C--

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- or --N(R.sub.3)--; R.sub.1 and R.sub.2 each independently represent a hydrogen atom, an alkyl group, an aryl group, a monovalent heterocyclic group, a carboxyl group, a substituted carboxyl group or a cyano group; R.sub.3 represents a hydrogen atom, an alkyl group, an aryl group, a monovalent heterocyclic group, an arylalkyl group or a substituted amino group. Moreover, the prior art of record neither anticipated nor rendered obvious all the limitation of claim 5 including a translucent member provided between the light sensing unit and light emitting unit.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARC ARMAND whose telephone number is (571)272-9751. The examiner can normally be reached on Monday - Friday between 9-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marc-Anthony Armand/
Examiner, Art Unit 2814

/Wai-Sing Louie/
Primary Examiner, Art Unit 2814

/M. A./